

I CLAIM:

1. A metallic leadframe structure for use with a semiconductor chip intended for operation in a changing magnetic field, comprising:
 - 5 a chip mount pad having at least one slit penetrating the whole thickness of said pad and substantially traversing the area of said pad from one edge to the opposite edge; and
 - 10 said slit wide enough to interrupt electron flow in the pad plane, but not wide enough to significantly reduce thermal conduction in a direction normal to said pad plane, whereby said slit is operable to disrupt eddy currents induced in said pad by said changing magnetic field.
- 15 2. The leadframe according to Claim 1 wherein said slit has a width from about 0.01 to 0.5 mm.
3. The leadframe according to Claim 1 wherein said structure comprises a sheet-like starting configuration having a thickness in the range from about 100 to 300
 - 20 μm.
4. The leadframe according to Claim 3 wherein said sheet-like starting configuration is selected from a group of metals consisting of copper, copper alloy, brass, aluminum, iron-nickel alloy, and invar.
 - 25 5. The leadframe according to Claim 1 wherein said pad has an area larger than said chip intended for mounting.
 6. The leadframe according to Claim 1 wherein said pad has an area smaller than said chip intended for mounting.
- 30 7. The leadframe according to Claim 1 wherein said chip has an integrated circuit including a Hall device.
8. A metallic leadframe structure for use with a

semiconductor chip intended for operation in a changing magnetic field, comprising:

5 a chip mount pad having a plurality of slits in a configuration operable to suppress eddy currents induced in said pad by said changing magnetic field;

10 each of said slits wide enough to interrupt electron flow in the pad plane, but not wide enough to significantly reduce thermal conduction in a direction normal to said pad plane.

15 9. The leadframe according to Claim 8 wherein said plurality of slits is configured approximately parallel or approximately star-burst-like, or in any pattern suitable for suppressing the origin of eddy currents, while preserving the mechanical stability and thermal conduction of said leadframe.

20 10. A semiconductor device intended for operation in a changing magnetic field, comprising:

25 a leadframe comprising a chip mount pad having at least one slit in a configuration operable to suppress eddy currents induced in said pad by said changing magnetic field;

30 an integrated circuit chip, having an active and a passive surface;

35 said passive surface attached to said mount pad by a polymeric material; and

40 said active surface having a Hall structure including current and voltage terminals integrated into said circuit, whereby said changing magnetic field can be measured without diminution by said eddy currents.

45 11. The device according to Claim 10 further having an

integrated current conductor in the proximity of said Hall structure, said conductor operable to conduct a changing electric current, creating said changing magnetic field normal to the plane of said Hall
5 structure.

12. The device according to Claim 10 further comprising leadframe segments having their first end near said mount pad and their second end remote from said mount pad.

10 13. The device according to Claim 12 further comprising bonding wires interconnecting said Hall current and voltage terminals and respective first ends of said lead segments.

14. The device according to Claim 13 further comprising encapsulation material surrounding said chip, said bonding wires and said first ends of said lead segments, while leaving said second ends of said lead segments exposed, whereby said second ends are suitable
15 for solder interconnection to other parts.

20 15. The device according to Claim 13 wherein said bonding wires are selected from a group consisting of gold, copper, aluminum, and alloys thereof.

16. The device according to Claim 14 wherein said encapsulation material is a polymeric material selected
25 from a group consisting of epoxy-based molding compounds suitable for adhesion to said active chip surface and said leadframe.

17. The device according to Claim 14 wherein said solder attachment comprises solder materials selected from a
30 group consisting of tin/lead, tin/indium, tin/silver, tin/bismuth, and conductive adhesive compounds.

18. A method of measuring the accurate amplitude of a

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changing electric current flowing through a conductor,
comprising the steps of:

providing an integrated circuit chip having an
active and a passive surface, said active surface
having an integrated circuit, said conductor and
an integrated Hall structure;

providing a metallic leadframe having a chip mount
pad reducing or eliminating eddy currents in the
vicinity of said Hall structure;

assembling said chip and said leadframe;
initiating said changing electric current through
said conductor, thus creating a changing magnetic
field normal to the plane of said Hall structure;
measuring the changing voltage induced in said Hall
structure by said changing magnetic field;
calculating the strength of said changing magnetic
field, undiminished by said eliminated eddy
currents, thereby determining the accurate
amplitude of said changing electric current
causing said changing magnetic field.

19. The method according to Claim 18 wherein said changing
current is an alternating current.

20. The method according to Claim 18 wherein said step of
assembling comprises the steps of:

25 attaching said passive chip surface to said pad chip
mount pad;
wire bonding said Hall structure to said leadframe;
and
encapsulating said assembled chip.

30 21. A method of measuring the accurate amplitude of a
changing electric current, comprising the steps of:
providing an integrated circuit chip having an

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active and a passive surface, said active surface having an integrated circuit and an integrated Hall structure;

providing a metallic leadframe having a chip mount
5 pad reducing or eliminating eddy currents in the vicinity of said Hall structure;

assembling said chip and said leadframe, and packaging said assembly;

positioning said packaged assembly in the changing magnetic field created by said changing electric current such that said changing magnetic field is normal to the plane of said Hall structure;

measuring the changing voltage induced in said Hall structure by said changing magnetic field;

calculating the strength of said changing magnetic field, undiminished by said eliminated eddy currents, thereby determining the accurate amplitude of said changing electric current causing said changing magnetic field.

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